Annex D

Tabulated ESMP

Design	Refers to Front End Engineering and Design when contractors design the Project based on inputs from the Proponents's engineering team and from the EIA Team
Construction	Refers to the phase during which the Project's various components are being constructed, including wellfield development
Operations	Refers to the phase of the Project when gas is pumped in from the wellfield, processed onshore and pumped to LNG vessels for export

EIA Ref	Risk/ Impact	Activity/ Aspect	Project Phase in which mitigation will be implemented	Mitigation/ Enhancement Measures	Responsibility for Mitigation	Monitoring
Marine Ecology						
11.4	Impact on offshore benthos and deepwater reef organisms	Discharge of treated drill cuttings and residual muds.	Construction and Operations	Minimise disturbance to benthos and reef organisms by employing a subsurface discharge chute extending to approximately 10-15m depth for overside disposal of treated drill cuttings and residual mud such that the size of the deposition footprint that is >1mm is reduced.	Contractor	ROV surveys to be performed before and after drilling activities to monitor the visible impacts on the seabed on a well by well basis.
				Restrict discharges of drill cuttings and residual mud to distances of >500m from deepwater high relief reefs, as determined by ROV survey.	Contractor	
11.5	Water quality impacts on offshore marine ecology	Discharge of treated drill cuttings and residual muds.	Construction and Operations	The drill rigs willbe designed in accordance with Good International Industry Practice (GIIP) to have an efficient solids control and mud recirculation system, including shakers, mud cleaners, dryers and centrifuges.	Contractor	
				Water based muds (WBMs) and low toxicity additives will be used whenever possible (eg concentrations of mercury and cadmium in the barite will not exceed 1mg/l and 3mg/l respectively).	Contractor	Require and maintain MSDS for SBMs and chemicals used in drilling muds.
				Synthetic based muds (SBMs) that are low in toxicity, biodegradable and do not bioaccumulate willbe used (eg polyaromatic hydrocarbon (PAH) content of less than 0.001 percent and a total aromatic content of less than 0. 5 percent). All chemicals used will conform with Cefas's Offshore Chemical Notification Scheme (OCNS) and OSPARs PLONOR (pose little or no risk) list of substances.	Contractor	
				Cuttings discharged will have a maximum oil concentration by weight of dry cuttings in accordance with Good International Industry Practice.	Contractor	Standard testing prior to discharge.
11.6	Water quality impacts on offshore marine ecology	Discharge of hydrotest water	Construction	Prepare a hydrotest disposal procedure that considers point of discharge, rate of discharge, chemical use and dispersion.	Contractor	To be specified by the hydrotest disposal procedure.

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11.7	Impact of increased marine noise, light and vessel movement	Project activities will result in greater disturbance (noise, light and vessel movement)	Construction and Operations	Develop a Marine Mammal Observation Procedure (MMOP) that addresses, at least, the need for trained marine mammal observors, record keeping, vessel movement, light, noise, avoidance strategies and helicopter traffic.	Proponents and Contractor	
				Keep any disoriented but otherwise unharmed seabirds found on vessels at night in dark containers and release during daylight. Any ringed/banded birds found on vessels willbe reported to the appropriate ringing/banding scheme.	Proponents and Contractor	
				Prohibit all crew members from killing or causing injury to marine fauna (any crew members found to have deliberately killed or caused injury to marine fauna shall be dismissed immediately and removed to shore).	Proponents and Contractor	
				Undertake environmental awareness training of all crew members, which includes training on the conservation status of cetaceans and turtles.	Proponents and Contractor	
11.8	Impact of habitat changes on offshore seabed	Introduction of subsea infrastructure	Design and construction	Survey proposed locations of subsea infrastructure (eg subsea production equipment and pipelines) by ROV in order to avoid to the extent practical intercepting deepwater reefs.	Contractor	
11.9 and 11.10	Impact of turbidity on near shore environment	Dredging in Palma Bay.	Construction and Operations	Develop separate dredging plans for construction and maintenance dredging that considers at least turbidity and light levels.	Contractor	Monitor turbidity levels in the Zone of Moderate Impact as per prcedure described in the EIA.
		Dredging between Rongui and Tecomaji	Construction	Prior to commencement of dredging between Tecomaji and Rongui, undertake a pilot test of the selected dredge technique to check whether the action of the chosen dredging technique, eg CS Dredger head, on the coral basement and corals in the pipeline corridor is likely to generate plumes of very fine material.	Contractor	
				Develop separate dredging plans for construction and maintenance dredging that considers at least turbidity and light levels.	Contractor	Monitor turbidity levels in the Zone of Moderate Impact as per prcedure described in the EIA.
11.11	Impact of settling of residual fine dredged material on the near shore marine ecology	Dredging in the bay may result in burial of near shore benthos	Construction	Selection of dredging equipment by the contractor will be appropriate to the depths and meterial types to be dredged, and to minimise the creation of plumes.	Contractor	
11.13	Impact of sea bed modification on near shore marine ecology	Dredging will alter the sea bed	Design	Align the pipeline trench as far south in proposed corridor between Tecomaji and Rongui Islands, as is possible, within the constraints of engineering feasibility.	Contractor	
				Reduce the width of the pipeline corridor to as low as practically possible, targetting approximately 100m.	Contractor	

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			Construction	Enhance recolonisation and regrowth of seagrass by providing suitable substrate wherever practical.	Contractor	
				Align the pipeline to avoid as much impact to the coral bommies to the extent practical. Where bommies are significantly impacted, place either concrete blocks or quarried stone in 'clumps' in the disturbed areas, where practical.	Contractor	
				Where practical, place pipeline support structures designed to enhance coral recolonisation in the fringing reef between Tecomaji and Rongui.	Contractor	
11.14	Impact of disposal of dredged material at the head of the canyon on the near shore environment	Disposal of dredged material	Construction	Record the locations of dredge material disposal and avoid dredge material disposal beyond the designated dredge placement area.	Contractor	
			Operations (maintenance dredging)	To be developed as part of the maintenance dredging plan.	Contractor	To be specified by the plan.
11.15	Impact to sand beach communities from disruption of physical and biological coastal processes.	The installation of jetties, MOF and other near shore infrastructure and activities.	Design, Construction and Operation	Includes placement of bridging/culverts within the causeways and adequate water/particulate matter exchanges.	Contractor	
11.16	Impact of habitat modification on marine ecology	Installation of the jetties, MOF and other port structures will introduce hard substrate into a sandy (soft substrate) environment	Design and Construction	Any protection employed for the footwall will be suitable for colonisation by corals, sponges and associated organisms. This can either be concrete, so-called eco-blocks or large quarried stone for example.	Contractor	
11.17	Impact of noise on near shore marine organisms	Pile driving for near shore structures	Construction	The Marine Mammal Observation Procedure should allow for a 'soft start' procedure when megafauna are present in the bay. Where feasible, the soft start will last for approximately 20 minutes prior to operating at the full cycle rate for percussion piling. This will provide the opportunity for megafauna specifically to move out of range of disturbance.	Contractor	

EIA Ref	Risk/ Impact	Activity/ Aspect	Project Phase in which mitigation will be implemented	Mitigation/ Enhancement Measures	Responsibility for Mitigation	Monitoring
11.18	Impact of ballast water discharges and introduction of alien species	Vessels discharging ballast water	Operations	A ballast water management plan for all vessels entering Palma Bay that are linked in any way to the Project are to comply with current IMO regulations concerning ballast water discharge and treatment.	Proponents and Contractor	
				All slow moving craft such as barges entering the area from non-east African ports are to have hull inspections for 'hitch-hiking' sessile alien species, eg barnacles, mussels, sponges etc. If these are found then controls are to be instituted to reduce associated risks of these escaping to the Palma Bay marine environment. This willinclude requirements for hull inspection certificates prior to barge departures from their loading ports.	Contractor	
11.19	Impact of discharges from the desalinisation plant and sewage treatment plant on marine ecology	Discharge of brine and treated sewage effluent	Construction and Operations	Ensure that brine and treated sewage effluent discharges into Palma Bay operate at optimum efficiency in line with the Project Water Resources and Wastewater Management Plan through auditable maintenance schedules and meet all water quality related effluent parameters. Treated sewage effluent will comply with all applicable standards and Regulations (national and international).	Proponents and Contractor	
11.20	Impact of discharged treated produced water on marine ecology	Discharge of treated produced (formation water) into the bay	Operations	In line with the Water Resources and Wastewater Management Plan, combine the flow of the treated produced water with the discharges from the desalinisation plant and sewage treatment plant.	Proponents or Contractor	
11.21	Impact of stormwater dicharge on marine ecology	Discharge of stromwater into the bay	Construction	Establish a Water Resources and Wastewater Management Plan to implement Good International Industry Practice for stormwater management.	Contractor	
			Operations	Establish a Water Resources and Wastewater Management Plan with stormwater retention dam(s) sufficient to capture the first-flush of stormwater. Treat any stormwater that may be impacted by hydrocarbons prior to disposal or discharge.	Proponents or Contractor	
11.22	Impact of infilling the estuary in Catchment B	Depositing dredged material to infill the estuary at Catchment B	Construction	Infill from the top of the remaining estuary towards the bay to allow motile organisms, eg fish, crabs to escape to the downstream water Palma Bay water body and shoreline.	Contractor	
11.24	Impact on near shore marine fauna and sea birds	Operational discharges from ships	Construction	Prior to the establishment of the Port Reception Facilities in Palma Bay (ie during the construction phase) vessels associated with the EPC Contractor will comply with MARPOL 73/78 at a minimum and utilise MARPOL compliant waste facilities elsewhere for offloading wastes	Proponents and Contractor	
			Operations	All Project vessels will comply with MARPOL 73/78 at a minimum. This will, inter alia, necessitate the provision of Port Reception Facilities for vessels based at the facility ie support vessels and tugs, as well as effective waste disposal.	Proponents and Contractor	

EIA Ref	Risk/ Impact	Activity/ Aspect	Project Phase in which mitigation will be implemented	Mitigation/ Enhancement Measures	Responsibility for Mitigation	Monitoring
Air Quality and GHG Emissions						
12.2.2	Project Contribution of SO_2 to the atmosphere	Operation of LNG Trains	Design	Investigate the feasibility of changing turbine technology to reduce SO_2 emissions or stack height to reduce ambient concentrations of SO_2.	Contractor	
12.2.2	Contribution to Mozambique's GHG emissions	Greenhouse Gas Emissions	Design, Construction and Operations	Design facility to minimise fugitive emissions. Contractor to survey facilities for fugitive emissions prior to turnover to the Proponents. Implement leak detection and repair programme for potential fugitive emissions from valves, flanges, seals and connectors associated with LNG processing and storage.	Proponents and Contractor	Monitor for leaks and fugitive emissions as part of an Air Emissions Management Plan.
				Contractor to select and use best available technology to the extent practical Use energy efficient vehicles/ machinery and maintain them in good working condition to reduce fuel consumption.	Proponents and Contractor	Develop a GHG monitoring and reporting plan that is consistent with Mozambique and IFC requirements.
			Design and Construction	Reduce electricity consumption and GHG emissions at camps and other buildings using Good International Industry Practice as far as practical.	Contractor	Develop a GHG monitoring and reporting plan that is consistent with Mozambique and IFC requirements.
Visual						
12.5.4 to 12.5.8	Impacts to landscape, seascape and visual amenity	Construction activities (vegetation clearance, lighting, vehicles and equipment) and operational activities (presence of onshore and nearshore buildings and infrastructure).	Design	Design the Project to: - be consolidated within the boundaries of the Revised Project Footprint Area (*Figure 10.3* of the EIA) - align fencing to follow natural contours wherever practical - use colours that blend in with surrounding environment as far as practical - have lighting that avoids 'light spill' The Project will develop a landscaping plan that allows for visual screening by indigenous vegetation.	Contractor	
			Construction	Implement the Soils, Erosion Control and Reinstatement Management Plan to: - Ensure vegetation clearance is minimised - revegetate temporary use areas	Contractor	
				Dust suppression procedures will be implemented as per the Soils, Erosion Control and Reinstatement Management Plan.	Contractor	
			Construction and Operations	Restrict lighting outside normal working hours to the minimum required for safety and security.	Proponents and Contractor	

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Noise						
12.4.2 and 12.4.3	Noise impact on Noise Sensitive Receptors	Construction activities, LNG processing, Shipping, Use of airstrip	Construction and Operations	Where possible, minimise construction activities during the night time.	Proponents and Contractor	Measure ambient noise levels at identified noise sensitive receptors (*Figure 12.6* in Chapter 12) every 6 months. Measure noise levels when complaints regarding noise are received.
				Ambient noise levels at identified receptors (communities outside the Afungi Project Site) should not exceed 45dB(A) at night and 55dB(A) during the day.	Proponents and Contractor	
				Ambient noise levels at the nearest receptor location offsite should not increase by more than 3dB.	Proponents and Contractor	
				The Project will develop aviation procedures that will address: - night flights - flight paths	Proponents and Contractor	
Soil						
12.6.2	Impact on land capability	Vegetation clearance, compaction of soil, soil erosion	Construction	Develop and implement a Soils, Erosion Control and Reinstatement Plan, which will inter alia address the following mitigation measures: - site clearance and revegetation - erosion and stockpiling management - dust suppression	Contractor	To be specified by the plan.
12.6.3	Impact on soil quality	Minor spills and leaks of fuel or oils	Construction and Operations	The Project's Polution and Hazardous Materials Management Plan and Emergency Response Plan will address spill prevention, clean up and response.	Proponents and Contractor	Specified in the Emergency Response Plan.
Groundwater						
12.8	Impact on community wells and on surface water ecology	Abstraction of groundwater	Construction and Operations	Pump water at the rate defined by the groundwater model for a sustainable yield such that the dynamic groundwater level does not fall below 3m amsl.	Proponents and Contractor	Implement groundwater monitoring as per the Water Resources and Wastewater Management Plan
			Construction	At the end of Year 2 of the Project, the groundwater model should be validated using actual monitoring data from the construction phase of the Project and if necessary re-calibrated.	Proponents or Contractor	

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Surface Water						
12.9.2 to 12.9.5	Impact on Wetland Habitat and Ecosystem Functions provided by these Wetlands	Site Clearance and Reclamation of Wetlands Changes to water quantity and water quality	Design/ Construction	The Project will develop a Wetland Management Plan which will include: - Wetland avoidance areas, including buffer zones. - Minimisation of impacts to wetlands within the Revised Project Footprint area (refer to figure *10.3* in the EIA). - Guidance on design of structures that cross wetlands or interfere with surface water hydrology. - Guidance on site clearance. - Demarcation of buffer zones. - Procedures for offset, rehabilitation, restoration and revegetation of impacts areas. - Construction of semi-permeable surfaces wherever possible. - Design of dredge material storage areas. - Strategy for reclaiming the wetland in catchment B. - The design and construction of a diversion channel to divert freshwater inflow at Catchment B to the estuary in Catchment E (see *Figure 12.33* of the EIA). - Stormwater runoff to surface water, in line with the Water Resources and Wastewater Management Plan - Chemical and waste storage facilities will be consistent with Good International Industry Practice such as bunding. The Project has developed an Emergency Response Plan that includes spill containment and clean up kits. The Project will develop a Soils, Erosion Control and Reinstatement Plan that will include erosion and sediment control measures (eg silt traps, cut off berms or intercepting channels) where required to minimise sedimentation of surface water courses. The Project has developed a draft Decommissioning and Rehabilitation Plan that will include measures to minimise impacts to surface water ecology on closure.	Contractor	The wetland management measures will specify monitoring requirements, specifically they will address monitoring (for physical, biological and chemical parameters) for wetlands in catchments A, C, D and E (refer to *Figure 12.33* in the EIA). Monitoring will begin prior to construction.

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Terrestrial Ecology						
12.11.5 , 12.12.5 and 12.13.5	Impact of influx of people (Project Induced In-Migration and Project workforce)	Influx of people resulting in excessive natural resource use, site clearing, hunting and increase in pests (eg rats).	Pre-Construction	The Project will undertake a Project Induced In-migration Management study to address environmental and social issues related to anthropogenic encroachment.	Proponents	
			Construction and Operation	Investigate the potential to use mobile fire control units to extinguish brush fires in the vicinity of the Project.	Proponents and Contractor	
				The Project should implement strict controls for food transport, storage and waste (food waste should be addressed as per the Waste Management Plan).	Proponents and Contractor	
				Employ early pest eradication steps at the outset of camp establishment in line with the Project's Soils, Erosion Control and Reinstatement Management Plan.	Proponents and Contractor	
12.10.2, 12.11.2, 12.12.2 and 12.13.2	Impact of Habitat Loss and Fragmentation	Site clearance	Design and Construction	The Project footprint area has been revised; see the Revised Onshore Project Footprint Area (*Figure 10.3* in the EIA).	Contractor	
				Within the Revised Onshore Project Footprint Area (Figure 10.3 of the EIA) restrict site clearance activities to the minimum area required.	Contractor	
				Implement the Environmental and Social Training and Awareness Programme as part of induction training. This training will include information on identified sensitive areas, the location of the Revised Onshore Project Footprint Area and buffer zones.	Contractor	
				Develop a site management strategy. This strategy will include the following measures to reduce impact to vegetation: - Minimize removal of vegetation to the extent practicable. - Minimises unnecessary removal of protected plant species such as baobab and mangrove species. - If possible, clear vegetation from the coastline towards the interior to allow fauna to move safely away. - Retain a corridors of undistrurbed vegetation to connect to habitats outside of areas to be cleared to allow fauna to move away. The Project will develop a landscaping plan that allows for connections of fragmented habitats.	Contractor	
			Pre-Construction	Undertake additional biodiversity studies to inform the Project's Biodiversity Strategy and Action Plan.	Proponents	

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Vegetation						
12.10.3	Impact of Invasive Plant Species	Site clearing coupled with construction vehicles coming into the site from elsewhere in the country	Construction	The Project will implement procedures to control alien invasive plants.	Proponents and Contractor	
			Construction and Operations	Use indigenous species and/ or non-invasive species for landscaping and gardens in accordance with the Soils, Erosion Control and Reinstatement Management Plan.	Proponents and Contractor	Should monitoring indicate the spread of invasive species, in situ control and eradication measures will be implemented
Herpetofauna						
12.11.2	Impact of site clearance on sensitive herpetofauna habitat	Site clearance	Before construction begins	Herpetologist to undertake additional field studies prior to construction to determine the habitat extent for the potentially new species of skink. The results of these field surveys are to be considered prior to site clearance activities.	Proponents	
12.11.3	Mortality, Displacement and Disturbance of Herpetofauna	Site clearance, vehicle movement, light pollution	Design and Construction	Design and construct culverts under roads for use as underpasses by herpetofauna. Culverts to be located close to drainage channels and wetlands t o the extent practical.	Contractor	
				Pipelines will either be raised approximately 50cm above the ground or buried at least 30cm below the ground surface.	Contractor	
				If fencing is to be electrified, the lowest electrified strand willbe at least 20 cm above the ground surface.	Contractor	
				Excavated trenches willbe left open for as short a time as possible to avoid entrapment. Open excavated trenches should have periodic breaks.	Contractor	
				Restrict lighting outside normal working hours to the minimum required for safety and security. Use non-ultraviolet (UV) lights, where possible.	Proponents and Contractor	
12.11.4	Impact of water pollution	Potential alteration of water quality due to physical or chemical constituents	Construction and Operation	Chemical and waste storage facilities will be consistent with Good International Industry Practice such as bunding.	Proponents and Contractor	
				Use slow release fertilisers for landscaping and re-vegetation in line with the Project's landscaping plan.	Proponents and Contractor	The wetland management measures will specify monitoring requirements, specifically they will address monitoring (for physical, biological and chemical parameters) for wetlands in catchments A, C, D and E (refer to Figure 12.33 in the EIA). Monitoring will begin prior to construction.

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Avifauna						
12.12.3	Impact of Displacement and Disturbance on Sensitive Bird Species	Night time light associated with construction and operations	Design, Construction and Operation	Design lighting strategies that address or minimise items such as degree of spill light, use of "up lights" and use of lights with red wavelengths. Down lighting is preferred as is lights with blue or green wavelengths.	Proponents and Contractor	
12.12.4	Disruption of Flyways and Migration Corridors	General construction and operational activities	Design and Construction	The construction of roads in wetland systems or through natural drainage routes will be avoided to the extent practical in order to keep water flow as close as possible to baseline conditions. In the event that this is not practicable, the following mitigation measures will be implemented. - Minimise and consolidate the number of crossings of natural drainage channels. - Minimise the width of roadways to that necessary for safe transport of personnel and equipment.	Contractor	
Mammals						
12.13.3	Impact of Mortality and Disturbances	Site clearance and vehicle movement	Construction	Where practical, construct roads that avoid areas of high sensitivity mammalian habitat (*Figure 12.42*). Where roads do cross these areas, implement measures to minimise mammal mortality.	Proponents and Contractor	
				Project site inductions will include information on protection of mammals.	Proponents and Contractor	
12.13.4	Habitat fragmentation and disruption of Natural Migration Patterns	Construction of roads, fences and other linear infrastructure	Design and Construction	Where roads and fences cross sensitive habitat, allow unhindered passage of mammals to the extent practical.	Contractor	
			Construction	Fences will be constructed in a systematic fashion, from the ocean inland in order to avoid entrapment within the fence line.	Contractor	
				Larger mammals trapped within the fence line will either be removed by a mammal expert/veterinarian trained in animal trapping and/or chemical immobilization (in the case of large predators, medium-size predators and larger ungulates). Culling is a last resort.	Contractor	
				Excavated trenches will be left open for as short a time as possible. They will have periodic breaks to allow animals to climb out. Where practical, the edges of trenches willbe raised slightly to create a barrier to prevent animals from running directly into the trench.	Contractor	Monitor open trenches for stranded animals.

EIA Ref	Risk/ Impact	Activity/ Aspect	Project Phase in which mitigation will be implemented	Mitigation/ Enhancement Measures	Responsibility for mitigation	Monitoring
Socio-economics						
13.2	Physical and economic displacement	Loss of land and physical infrastructure Loss of collective natural resource areas Disruption of land-based economic livelihoods Disruption of marine-based economic livelihoods	Design, Construction and Operation	Develop and implement Resettlement Action Plan (RAP) to address permanent physical displacement and temporary economic displacement associated with Project activities in accordance with Mozambican legislative requirements and the Project's resettlement principles. This will include consultation, compensation, income restoration, support for relocation and re-establishment, special assistance for the vulnerable, procedures for monitoring/ evaluation and implementing corrective measures, support of continued fishing activities (inluding migrant fishers), assisting with identifying alternative routes. points of passage, and safe passage of carriers.	Proponents	Annual qualitative and quantiative audits and review of implementation progress
14.2	Physical and economic displacement	Disruption of marine-based livelihoods	Pre-construction	Undertake additional fisheries studies to deepend the Project's understanding of fisheries and implications for marine-based livelihoods. This infomration will inform inform the RAP process.	Proponents	
13.3	Impacts on tourism	Disruption of tourism activities	Design, Construction and Operation	• Ensure design minimises the visual intrusion of the development on tourism receptors. • Ongoing engagement with affected tourism operators and communicate parameters of safety exclusion zones, and community grievance mechanism	Proponents	
13.3	Impacts on tourism	Increased demand for accommodation and leisure establishments	Design, Construction and Operation	• Facilitate ongoing engagement between Government and private sector stakeholders regarding tourism, recreation and economic development opportunities for the region • Support tourism initiatives by encouraging Government investment of Project revenue into the Cabo Delgado Province, and specifically Palma District • Raise awareness internally among project staff on the available tourism facilities and excursions (including diving and fishing) in the area	Proponents	
13.4	Project Induced In-Migration (positive impact)	In-migration of people	Design, Construction and Operation	• Work with government/ NGOs/ donors to encourage revenue distribution to the Cabo Delgado Province and Palma District in support of regional and provincial government capacity building, governance, and civil society empowerment. • Facilitate representative local and regional development forums to identify development initiatives and potential implementing partners, driven by Provincial and District level development plans and objectives • Implement national content strategies	Proponents and Contractor	

EIA Ref	Risk/ Impact	Activity/ Aspect	Project Phase in which mitigation will be implemented	Mitigation/ Enhancement Measures	Responsibility for mitigation	Monitoring
13.4	Project Induced In-Migration	In-migration of people	Design, Construction and Operation	Develop a Project Induced In-migration Study from which will specify approriate mitigation measures including community liaison, capacity building, closed camp policy, traffic management, health services, and recruitment and selection practices.	Proponents and Contractor	
13.5	Health and safety of the workers and communities	Spread of communicable diseases	Design, Construction and Operation	• Implement environmental health programs to reduce the potential risk of airborne pollutants • Implement a TB management policy and program for the workforce (including contractors), including screening at recruitment, adequate referral/ support for on-going treatment • Implement a risk-based vaccination program for all employees, contractors, and visitors • Provide adequate housing to the workforce to avoid overcrowding	Proponents and Contractor	Develop and implement a health monitoring programme for workers and communities.
		Vecor related diseases	Design, Construction and Operation	• Develop a robust baseline of local malaria burden • Consider health systems strengthening (HSS) in the Palma District • Implement an integrated malaria and vector control management plan includes chemical or physical control programmes, case management and bite prevention awareness-raising	Proponents and Contractor	Review and audit of implementation of vector control programme including schedules, awareness raising records
		Soil, water and waste related diseases	Design, Construction and Operation	• Implement Project water and waste management plans • Develop and implement a RAP, including effective water and sanitation programs • Design effective wastewater and sewerage treatment • Undertake awareness raising among staff and communities on proper water use, hygiene, and sanitation • Provide sufficient potable water facilities at the worker camp	Proponents and Contractor	Evaluate opportunities to develop an effective surveillance system to monitor the impacts of water and sanitation conditions in partnership with the local authorities Conduct monitoring and surveillance activities to ensure water is potable
		Sexually-transmitted infections and high risk sexual practices, including HIV/aids	Design, Construction and Operation	• Operate a closed camp for workers • Update baseline on reproductive health and STI statisitics, knowledge, practices and behaviors in the Project area • Develop a clear HIV and STI management program in the workplace. Contractors will also be required to have awareness raising programmes. • Prevent the development of spontaneous camps or expansion of existing communities (camp-follower communities) by speculative migrants (see mitigation for PIIM) • Evaluate opportunities to support specific HSS activities in the district • Encourage widespread availability and social marketing of condoms in the workplace	Proponents and Contractor	Develop and implement a health monitoring programme for workers and communities.

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		Food and nutrition-related issues	Design, Construction and Operation	• Perform a baseline nutritional and micro-nutrient deficiency survey in the study area • Monitoring to track potential challenges related to food production and food security. • Consider supporting local awareness-raising programs in the surrounding communities (integrated with water and sanitation and malaria programs) • Support programs promoting improved farming techniques • Programmes in the workplace to promote proper feeding practices to prevent obesity and non-communicable diseases.	Proponents and Contractor	Develop and implement a health monitoring programme for workers and communities.
		Accidents/ injuries	Design, Construction and Operation	• Develop and effectively communicate a policy and Emergency Response Plan to communities • Mobile equipment and machinery will be included in the overall health and safety management plan, including requirements for driver fitness to work and medical surveillance • Strict enforcement of no drug and alcohol policy (including contractors) • Driver training, rest periods, vehicle roadworthiness, speeding as part of vehicle requirements (including contractors)	Proponents and Contractor	Develop and implement a health monitoring programme for workers and communities.
		Social Determinants of Health	Construction and Operations	• Effective RAP implementation • Evaluate opportunities for local development support for vulnerable groups • Clear communication with local communities of level of responsibility and expectations of the operator.	Proponents and Contractor	Develop and implement a health monitoring programme for workers and communities.
		Health care services and infrastructure Health programmes and systems	Design, Construction and Operation	• Engage and partner with the Ministry of Health and consider supporting access to health care services in the study area, including upgrading of Palma hospital to district hospital • Occupational Health and Safety Management Plan to include site-based medical service managed by a reputable medical service • Consider vulnerability of local health systems before recruiting medical staff recruitment.	Proponents and Contractor	Develop and implement a health monitoring programme for workers and communities.

EIA Ref	Risk/ Impact	Activity/ Aspect	Project Phase in which mitigation will be implemented	Mitigation/ Enhancement Measures	Responsibility for mitigation	Monitoring
13.6	General economic impacts (positive impact)	Increased government revenue Employment, training and skills development Procurement of local goods and services Economic development and economic diversification	Design, Construction and Operation	• The Project will work alongside government, and the NGO and donor community throughout the life of the Project to encourage accountability and revenue distribution to provincial and district level government within the Project area. • the Project will facilitate ongoing engagement between relevant stakeholders to encourage revenue distribution to the Cabo Delgado Province and Palma District in support of regional and provincial government capacity building, governance, revenue management and civil society empowerment. • The Project will undertake a Revenue Management Study to better understand the Mozambican economy, encourage accountability and suggest means of increasing potential revenue distribution. • Develop a National Content Strategy consistent with discussions with government that will address measures to maximise local employment and procurement. Develop policies and procedures to support the strategy. Contractors will also be required to support and implement the national content strategy and policies/ procedures that support it. • Encourage transparency and accountability in the management of Project revenue used to support local development initiatives.	Proponents	
13.6	General economic impacts	Unmet expectations for local employment and procurement of goods and services	Design, Construction and Operation	Develop a National Content Strategy consistent with discussions with government that will address measures to maximise local employment and procurement. Develop policies and procedures to support the strategy. Contractors will also be required to support and implement the national content strategy and policies/ procedures that support it. The Stakeholder Engagement Plan s will be implemented to ensure fair recruitment from different communities. A Grievance Mechanism will be implemented to address community grievances around local employment and procurement.	Proponents	
13.7	Impacts to Shipping and Navigation: Risks of Collisions	Increased vessel movements in Palma Bay and futher offshore. Increased vessel movements in Palma Bay and further offshore resulting in disruption of commercial fishing activities	Construction and Operations	• All project vessels to operate in accordance with GIIP and compliance with national and international maritime legislation. • Conduct routine maintenance of navigation equipment and all navigation aids (buoys , lights) on all project vessels • Develop a Traffic and Transport Procedure (all Project phases) in liaison with the relveant maritime authority, including a Navigation Warning Scheme, schedule of vessel movements, speed limits as well as the size and duration of the exclusion zones • Engage and share information on Project activities and commercial fishing activities with relevant stakeholders, including the Maritime Authority • the Project will collaborate with Maritime Authorities to establish a grievance procedure for reporting grievances related to maritime activities through appropriate communication and engagement with relevant stakeholders	Proponents and Contractor	

EIA Ref	Risk/ Impact	Activity/ Aspect	Project Phase in which mitigation will be implemented	Mitigation/ Enhancement Measures	Responsibility for mitigation	Monitoring
13.7	Impacts to Shipping and Navigation	Impact of the Project Vessels and Activity on National and Regional Cabotage	Construction and Operations	• Develop a Traffic and Transport Procedure (all Project phases) in liaison with the relveant maritime authority, including a Navigation Warning Scheme, schedule of vessel movements, speed limits as well as the size and duration of the exclusion zones • Ensure dredging and construction vessels are equipped with navigation equipment and suitable aidsto minimise interference with other vessels and always maintain high visibility • Develop and use marine terminal systems, protocols and procedures aligned with national and international industry standards and maritime legislation. Revises these as operations change (eg increased LNG carrier traffic into the Export Terminal facilities) in collaboration with the Maritime Authority (INAMAR) and INAHINA • Ongoing engagement with shipping national and regional cabotage stakeholders regarding maritime activities, and to communicate specific Project information, eg exclusion zones. • the Project and INAMAR will develop mechanisms for regular Project communication regarding safety procedures.	Proponents and Contractor	
13.8 and 13.9	Impacts to Archaeology and Cultural Heritage	Onshore archaeology and cultural heritage sites	Construction	• Develop a Chance Finds Procedure in line with national laws and regulations, local customs and traditional norms and including training and awareness material, procedures for contractor reporting, and communicate this to local communities. The plan will outline strategies for liaising with communities in a culturally appropriate way, appointing an archaeologist during the construction phase, to train staff and contractors on the chance find procedure, including procedures for identification and relocation of possible significant finds. • The Project will investigate methods for commemorating any artefacts or sites identified, including erecting and maintaining a plaque with information on the sites • Undertake a detailed archaeological rescue investigation of Ngodje 1 (site 15) to determine future archaeological management of the site.	Proponents	
13.8 and 13.9	Impacts to Archaeology and Cultural Heritage	Offshore archaeology and cultural heritage sites	Construction	• Use an Autonomous Underwater Vehicle (AUV) or ROV to examine the seabed int he near shore and offshore prior to drilling or laying of the subsea infrastructure or pipelines to identify and where possible, avoid the cultural heritage artefact • Implement a Chance Finds Procedure, including mapping of the artefact, scanning and visual inspection • An experienced archaeologist will be engaged to advise and monitor on offshore construction activities and train staff/ contractors on chance finds procedure.	Proponents	